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ABSTRACT

A 1979 study conducted by the Colorado Commission on Higher Education to develop a plan for assessing and increasing faculty productivity is described. The central issue was the demand for individual faculty, departmental, and institutional autonomy versus demand by the political system for evidence that the faculty it funds produces adequate valued outcomes. In addition to conferring with Colorado institutional and state agency staff, higher education officers and researchers in Minnesota, California, Wisconsin, and Illinois were contacted regarding their policies and study findings. A review of the literature on formula budgeting, program evaluation, faculty load analysis, and productivity was also conducted. It was suggested that a workable approach to assessing and increasing faculty productivity is an organized, explicit and publicly visible process of institutional program review and evaluation, monitored by the state coordinating agency to gain public credibility. However, meaningful assessment and valid judgment of faculty productivity should be approached at the decentralized level of the faculty peer group. It is suggested that the problem of making this peer evaluation credible to the public is unresolved. A policy was developed in Colorado in 1980 calling for each state institution to develop a plan for reviewing each academic program at least once every seven years, and activities to be included in institutional review are specified. (SW)

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ASSESSING FACULTY PRODUCTIVITY:

An Issue for Decentralization

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THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper was presented at the Twenty-First Annual Forum of the Association for Institutional Research held at the Leamington Hotel in Minneapolis, Minnesota, May 17-20, 1981. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Mary Corcoran
University of Minnesota
(Editor, AIR Forum Publications)

A B S T R A C T

ASSESSING FACULTY PRODUCTIVITY:

An Issue for Decentralization

This paper reviews in retrospect a 1979 study by the author for a state coordinating agency in response to a legislative edict to "develop a plan for assessing and increasing faculty productivity."

The central issue is the demand for individual faculty, departmental, and institutional autonomy versus demand by the political system for evidence that the faculty it funds produce adequate valued outcomes.

The author concludes that the workable approach to "assessing and increasing faculty productivity" is an organized, explicit and publicly visible process of institutional program review and evaluation, monitored by the state coordinating agency to gain public credibility. However, meaningful assessment and valid judgment of faculty productivity can only be approached at the decentralized level of the faculty peer group. The problem of making this peer evaluation credible to the public remains unresolved.

ASSESSING FACULTY PRODUCTIVITY:

An Issue for Decentralization

A pet concept of the industrial age is PRODUCTIVITY, the relationship of the value of output products to the input costs of production. The demand for higher productivity in human services, including education, became a central urge of the program budgeting (PPBS) and management science movements in the 1960s and 1970s. Coupled with rising accountability expectations in public funding, the idea of "faculty productivity" has become a favorite topic of the cost-cutting urge in state legislatures in the past decade.

Aspects of faculty productivity also have been a favorite topic of institutional research. Questions of how to assess faculty productivity are explored under various themes in 11 of the 28 issues of New Directions for Institutional Research from 1974 through 1980. (Bowen, No.1, 1974; Doi, No.2, 1974; Cartter, No.6, 1975; Walhaus, No.8, 1975; Folger, No.16, 1977; Gonyea, No.17, 1978; Kirschling, No.20, 1978; Cooke, No.24, 1979; Dressel, No.26, 1980; Craven, No.27, 1980; and Heydinger, No.28, 1980.) Scanning of the proceedings and programs of the past 20 Forums of the Association for Institutional Research suggests that about one-quarter of the content has dealt with some dimension of faculty productivity. Most often these are concerned with the inputs (faculty and student characteristics, faculty loads, program costs) or the process (method, class size). Much use has been made of measures of "throughput" as proxies for output (student credit hours, degrees produced).

This paper examines the concern for faculty productivity from the perspective, two years later, of a 1979 study prepared by the author for a for a state coordinating commission. That study was carried out in response to a legislative edict that the commission, in conjunction with the six governing boards of public colleges and universities, "develop a plan for assessing and increasing faculty productivity" (Mason, 1979).

The Meaning of Faculty Productivity

"Productivity" is the capacity or ability to produce a valued outcome, change, benefit, or good. It commonly is defined in the economic sense of the value of the outputs relative to the value of inputs, the relationship between valued outcomes and values resources, the ratio of cost to benefits (Wallhaus, 1975, p. 1; Romney and Bogen, 1978, p. 6; Samuelson, 1970, p. 516; Drucker, 1974, p. 68).

What values are added by a process compared with the costs of carrying out the process? Are the outcomes worth the costs?

Faculty productivity is defined to express the values attributed to the outcomes of the processes of instruction, research, and public services performed by faculty members relative to the costs (inputs) of carrying out these processes.

Compared with the product outputs of agriculture, mining, and manufacturing, the outcomes of education are extremely complex, intangible, qualitative, individually unique, and longitudinal over the life of the beneficiaries.

The components of the higher education production functions are illustrated as follows:

The INPUTS to the production functions of faculty include:

— The qualifications in educational preparation and experience of the faculty to perform particular roles and duties in the programs of the institution.

— The educational preparation and learning characteristics of the students enrolled in the programs of the institutions.

— The resources required to perform faculty roles and duties: compensation and development of faculty qualifications; support staff; learning materials and resources; facilities and equipment; academic and administrative support.

The PROCESSES of the faculty production functions include:

— Instruction: Organized courses and informal interaction through which students learn and change in knowledge, understanding, skills, and personal growth.

— Research, scholarship, and creative work: Discovery, integration, and applications of knowledge; interpretation, criticism, and evaluation; creative writing and artistic performance; invention and technological development; maintaining and improving faculty qualifications.

— Public services: Consultation, practice, and application of knowledge and skills toward solution of social, economic, political, and technological problems.

The OUTPUTS or OUTCOMES of the faculty production functions include:

— Student change: Knowledge, skills, and abilities in expression, communication, problem-solving, self-assessment, value awareness, aesthetic awareness, creativity, leadership, learning capacity.

— Advancement of knowledge, understanding, technology, the arts, social criticism, philosophical reflection, value judgment....

— Services to business, labor, industry, government, social, educational, community, and agricultural groups, agencies, and individuals through consultation, clinics, hospitals, laboratories, experiment stations, extension and outreach programs, and

information reference services.

While indicators of input costs and the characteristics of the processes can be reasonably measured in higher education, the values attributed to the outcomes of the learning processes are difficult or impossible to measure. The values of the outcomes of higher education programs overwhelmingly are matters for informed judgments. How can these judgments be developed, recorded, and communicated with credibility to the public in a state plan to assess and increase faculty productivity?

In the past decade, the search for measures of outcomes has been intensive. The results of this search for measurable outcomes are very limited. The outcomes of education recurrently prove to be too complex, too longitudinal, to individually unique to yield satisfactorily to measurement. Yet the search for adequate, affordable measures of the value of educational outcomes remains a demanding challenge to institutional research.

The effort to define outcomes and their measurement centered at the National Center for Higher Education Management Systems (NCHEMS) has greatly enriched the understanding of the rich and varied nature of outcomes. From Micek and Arney (1974) to Lenning, Lee, Micek, and Service (1977) and Lenning (1977), the NCHEMS publications on outcomes have become vital references in this author's library. The more recent applications have centered on relating outcomes or purposes to needs assessment (see Lenning, 1980).

The high cost and complexity of measuring outcomes satisfactorily confirms that assessing the value of higher education outcomes remains a matter for informed judgment.

Clearly, the potentially massive detail, specificity, and content by which these components of faculty productivity are assessed by measurement, comparison, evaluation and judgment can be fully grasped only at the face-to-face primary group level, beginning with the academic department. Even in the smaller institutions, the specific detail must be summarized, aggregated, and generalized as assessment moves to the college and campus levels of administration. How can the information at that level be adequately communicated to the multi-campus and statewide levels for reasonable assessment of faculty productivity?

Imbedded in the issue of assessing faculty productivity is the classical problem of institutional research: How can institutional research best serve the policy-making processes while maintaining objective validity in the face of conflicting political decision preferences between its institution and those of the public authority by which the institution is funded?

The question is to what degree can faculty productivity be evaluated centrally, either by an institution or by a state coordinating agency, and how much must be left at the decentralized level of the faculty peer group? If decentralization is most appropriate level for useful evaluation, how can the validity of the assessment be credibly communicated in accounting to the public and its agencies?

Directive: Develop a Plan

The Colorado General Assembly, through its powerful Joint Budget Committee, added a footnote to its appropriation to the Colorado Commission on Higher Education for the fiscal year 1979-80:

> It is intended that up to $20,000 of these funds will be used to develop a plan for assessing and increasing faculty productivity, in conjunction with institutional governing boards. This plan shall be developed consistent with the individual roles and missions of the state's colleges and universities and shall be described in a report to the presented to the Education Committees and the Joint Budget Committee no later than January 8, 1980, so that it might be used in preparation of 1980-81 budget recommendations (Colorado, 1979a).

The author was contracted by the Colorado Commission on Higher Education as consulting project manager to develop the plan. To guide the project "in conjunction with institutional governing boards," the Executive Director of the Commission appointed a Policy Advisory Committee representing the six public governing boards and three "informed" citizens. Subsequently, to insure faculty representation, the Commission, itself, directed appointment of three members nominated by the chair of the faculty organization of one institution (selected by lot) from each sector--the 2-year institutions, the comprehensive colleges, and the universities.

A natural question of the legislators is, "What are other states doing about faculty productivity?" In addition to a search of the institutional research literature, an inquiry was submitted through the State Higher Education Executive Officers/National Center for Educational Statistics (SHEEO/NCES) Communications Network. The inquiry asked for any documentation of studies and policies involving faculty productivity, faculty workload or teaching load, or faculty activity analysis. Thirty-one states responded, 14 providing reference material (Quigley, 1979).

In addition to interviews and correspondence with Colorado institutional and state agency staff, the author conferred with higher education officers and researchers in Minnesota, California, Wisconsin, and Illinois, states and institutions selected because of work done there on the nature of faculty productivity. Others were contacted by telephone and correspondence about their work relating to productivity.

An extensive search of the literature on formula budgeting, program evaluation, faculty load analysis, and productivity increasingly affirmed that the measurable dimensions of faculty productivity are the inputs (costs) and processes (loads). The outcomes are matters for judgment, organized and reported through program review and evaluation.

Inputs to Faculty Productivity

A formula budget approach has evolved in Colorado over the past decade to define the State appropriation inputs to faculty productivity in terms of full-time equivalent (FTE) faculty positions to be funded in the coming fiscal year. The faculty funding formula is enrollment driven in terms of expected FTE students.

The faculty formula was developed in 1975-76 by the institutions, dissatified with earlier versions of a faculty funding formula developed by the Commission staff. A Joint Formula Budget Committee of the Association of Colorado Public College and University Presidents tested alternative approaches against actual data for the 20 state institutions in 1973-74 and 1974-75. It was seeking a relatively simple approach that would reflect the differing roles and missions of the institutions, permit diversity of programming and instruction styles, and seek equitable distribution among institutions and programs (Association, 1976).

The resulting "Guidelines for Formula Faculty" uses 36 discipline categories — the 2-digit level of the Taxonomy of Instruction Programs in Higher Education (Huff and Chandler, 1970) used in the Higher Education General Information Survey (HEGIS). The faculty FTE and student FTE loads by HEGIS discipline then are allocated by four levels of instruction (Lower, Upper, Grad 1, and Grad 2). Student/Faculty ratios were proposed in 116 of the 144 cells of the matrix. The purposes were to tie to national definitions of discipline and level for comparability and to reflect adequately the differing program mixes of the institutions. The equity was sought by using the same student/faculty ratio in a given discipline and level for all institutions.

Note that the FTE student/FTE faculty ratio is a combination of the average teaching load in credit hours taught times the weighted average class size in a given discipline and level of instruction divided by the average full-time student load in credit hours. In that sense, it defines indirectly the utilization of faculty cost relative to the throughput of students in class instruction in which learning outcomes are produced. The ratio, derived from student credit hours taught per FTE faculty unit, implies the most commonly used proxie for the output of instruction programs. That classical measure in institutional research, of course, does not measure the outcomes in terms of student change — the learning value added by instruction.

Adopted by the State beginning in 1977-78 fiscal year request budgets, the Guidelines for Formula Faculty carry the following statement:

> The student/faculty ratios should be used as a guide to the total number of faculty positions appropriated for instruction at an institution. An institution would determine its overall instructional faculty needed by adding together its needs for each level and discipline using the proposed student/faculty ratio

> guideline, but the assignment of the faculty would be at the institution's discretion.... This approach provides flexibility in assigning faculty positions in ways most appropriate to the institution's mission and student characteristics. (Colorado Manual, 1979-80).

In request budget formats, the institutions enter the FTE students for each field and level for the actual past year, budgeted current year, and proposed request year (using Guidelines for Reporting FTE Enrollments, an auditable approach developed by the institutions and the Commission). These FTE student loads are divided by the appropriate ratio from the Guidelines for Formula Faculty to calculate FTE faculty positions needed. The sum of FTE faculty is the justified appropriation request.

After reviewing the formula approaches used in several other states, the author concluded that

> The Colorado formula faculty approach using subject discipline and level of instruction ratios of FTE faculty required for expected distributions of FTE students is an appropriate, rational, workable, and comparatively conservative way for the State to determine the numbers of faculty positions funded as input to its higher education productive functions.

Since several years had elapsed since the Guidelines were developed against 1974-75 actual data and other changes and improvements had emerged in four years of use in budget development, the author recommended that the Commission and the institutions undertake a review, evaluation, and revision of the Guidelines. Subsequently, a task force was formed by the Commission representing its staff, the institutions, the legislature, and the governor's budget office. The task has proved to be difficult, with disagreements over comparisons with institutional groupings in other states.

The critical problem of working out agreements on funding faculty inputs and process loads will continue to be an issue in which institutional research has a major role. The differing expectations and values among institutions and with funding agencies will continue to require political solutions. The potential contribution of objective institutional research is to help define and limit scope of political conflict and compromise by providing acceptable analysis of how many of what kinds of resources are needed to carry out higher education programs. The continuing political issue is "What is the value of those programs?"

The Colorado Guidelines for Formula Faculty define a way to determine the faculty input to an institution's overall instructional program. Its ratios imply the average "rules" of the process in terms of student loads per faculty teaching unit. While these are the most commonly used proxies of instructional outcomes, the ratios are measures of throughput. They do not define the expected outcomes in terms of student change — the learning value added.

Since the 1979 Colorado legislative directive used the term "faculty

productivity" (rather than "workload") this was interpreted to mean that the public representatives wanted better insight into the value of the instructional outcomes for which they were funding faculty positions in the public institutions. This led to a search for a better way of evaluating the products of the public higher education expenditure.

Assessing Productive Outcome Value

The Colorado faculty productivity planning study involved an extensive search of the literature and the inquiry to other states through the SHEEO/NCES Communications Network in search of ways of assessing the outcome values of faculty productivity.

After reviewing the literature and the responses from the SHEEO/NCES network, the author selected California, Minnesota, Wisconsin, and Illinois for fuller on-site study. Interviews were scheduled at the Office of the Chancellor, California State University and Colleges; the University of California central administration and Berkeley campus; the California Postsecondary Education Commission; the University of Minnesota; the University of Wisconsin System; and the Illinois Board of Higher Education.

Combined with these interviews and the search of the literature and other state policies, further discussion with Colorado institutional officers and faculty and the guiding review of the Policy Advisory Committee for the study pointed to a central conclusion:

> ...The project manager for the faculty productivity plan finds there is one clear, workable approach to assessing and increasing faculty productivity: An organized, explicit, coherent process of institutional program review and evaluation that is specifically intended to find ways of improving the effectiveness and quality of program outcomes and of increasing the efficiency of the use of resources. This intensified system of program review and evaluation can build on existing and traditional institutional self-evaluation processes, but these must be greatly strengthened and made visible to the public as truly effective and credible (Mason, 1979, p. 23).

This conclusion was justified from the findings of the study in analyzing the traditional internal institutional processes of administration, accreditation self-study and external review, the existing statutory authority of the Colorado Commission on Higher Education for approving new programs, and the judgment of the value of the system-wide program review and evaluation processes developed by the University of Wisconsin System and the Illinois Board of Higher Education.

The author found that

> Except for the periodic accreditation review and evaluation,

much of the internal institutional review and evaluation has very low visibility. In part because much of that traditional process involves the confidentiality of personnel evaluations and in part because the normal processes of internal evaluation tend to be informal and subjective, the results are not extensively publicized. Furthermore, the institutional self-evaluation, even when involving outside evaluators in accreditation review, does not always carry full credibility to the public because it is considered primarily in the self-interest of the educators without full concern for the wider "public interest."

To achieve a higher degree of public credibility, the author found that the approaches that had evolved in Wisconsin and Illinois systems provided a statewide monitoring and limited participation in decentralized institutional program review that evidently improved its credibility to the general public.

Both Wisconsin and Illinois stressed that the evaluation processes must be done at the institutional level and that positive incentives must be provided to the institutional participants if their self-evaluation processes were to be truly significant in improving program effectiveness and efficiency. (See Groves, 1979; Illinois, 1979; Wisconsin, 1977; Smith, 1978 and 1980; Hoenack and Berg, 1980; Mason, 1980.)

The study concluded with recommendations that the Colorado Commission on Higher Education, in consultation with the governing boards and their institutions, establish a task force to design and recommend a statewide system for program review and evaluation of the state colleges and universities.

A Program Review Committee was formed in 1980 from members and staff of the Commission, institutional representatives from each of the six governing board sectors, and a faculty representative. Its report was adopted by the Commission in December 1980 as a "Policy and General Procedures for State-Level Review of Existing Programs in State-Supported Institutions of Higher Education in Colorado." (Colorado Commission, 1980.)

That policy called for each institution to develop a plan for reviewing each academic program at least once every seven years. It outlines the required activities to be included in institutional review and the content of program review summary reports to be filed with the Commission. The Commission may periodically suggest programs that need statewide study to be undertaken jointly by the institutions and the Commission.

In its preamble, the Committee states that

> Interest in developing policy guidelines to review existing programs in publicly-supported institutions of higher education in Colorado was stimulated by the need to better assess and increase faculty productivity. However, the productivity issue is but one component of the overall purpose of program review. The primary focus of program review is institutional improvement which includes the maintenance and enhancement of program quality. Decisions

> related to program expansion, contraction, consolidation, and termination as well as the reallocation of resources within institutions are among those to be informed by the results of program review.
>
> The policy that follows strikes a balance betwen legitimate needs for public accountability and institutional autonomy in matters of internal management.... The Committee believes there is a direct relationship between the "success" of program review activities and the incentive system in which they occur. Hence, to enhance program review, it seems appropriate at this time to suggest that the overall incentive system in which program review will take place be evaluated and improved (Colorado Commission, 1980).

Generally the new Colorado policy for program review reflects specific adaptation of the approach that appears to be working in Wisconsin and Illinois.

The issues that remain are how best to strike that balance between public accountability and institutional autonomy and to develop an incentive system that makes effective program review at the institutional level worthwhile. These issues have emerged in the 1980s as major concerns for the focus of institutional research. The most recent issue of New Directions for Institutional Research: Institutional Assessment for Self-Improvement (No. 29, Miller, 1981) is a significant summary of the current arts of institutional self-study. The need for factual information to inform judgment in the processes of program review and evaluation was the origin of the profession of institutional research in its emergence 30 years ago in planning for the growth of higher education. In the next 30 years, I believe that effective institutional research is even more critical in planning for survival.

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